

**ABSTRACT**

A method of growing a semiconductor layer in a selective area by Metal Organic Chemical Vapor Deposition (MOCVD) and a mask pattern for same, includes a first mask pattern and a second mask pattern that are formed on a semiconductor substrate 5 having a (100) crystalline plane. The first mask pattern has a first window wider than the selective area and a second mask pattern has a second window and a third window. The second window is defined by spacing the second mask pattern from the first mask pattern, in correspondence with a blocking area for blocking the surface migration of III-group semiconductor source gases at edges of the first window. The third window is 10 as wide as the selective area. The semiconductor layer is grown by MOCVD on the semiconductor substrate exposed by the second and third windows. Trenches can be etched in the second and third windows and growth layers extend from the trench beyond the surface of the InP to block gas dispersion.